

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/719,192	BAEK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LEILA MALEK	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 06 March 2009.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 8 and 10-12 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 8 and 10-12 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 22 May 2007 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/22/2009.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 20090722.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. Per conversation with Applicant's representative (see the Interview Summary) Examiner agreed to withdraw the finality of the last office action, because Applicant's submission of an information disclosure statement was under 37 CFR 1.97(e).

### ***Information Disclosure Statement***

2. The information disclosure statement submitted on 04/22/2009 has been considered and made of record by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 8 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryan (US 7,065,036), in view of Makoto (see reference #2, cited by the Applicant in IDS submitted on 04/22/2009).

As to claim 8, Ryan discloses a method of transforming an OFDM signal (see Figs. 4 and 5) by a fast Fourier transform (FFT) processor (see Fig. 5, block 511, and column 9, lines 28-30), the OFDM signal having a symbol (see Fig. 4), the symbol including a first long preamble 407, a second long preamble 409 and first data (data 1) ,

the first and second long preambles respectively having a sequence of N-samples, the method comprising: storing the first long preamble and the second long preamble in a buffer (see Fig. 5, block 510); reading the long preambles from the buffer (see column 9, line 8) transforming the long preambles by a fast Fourier transform, respectively, into a third preamble and a fourth preamble (see column 9, lines 28-32); transforming second data that is received by the FFT processor after the first data is buffered, and the first data, respectively (see column 9, lines 28-32) into third data when the first and second long preambles are transformed into the third and fourth preambles; and finishing the fast Fourier transform method when the symbol is a final symbol, and continuing the FFT processing when the symbol is not the final symbol (see column 9, lines 28-32, where Ryan discloses that the whole data has been transformed by FFT unit). Ryan discloses all the subject matters claimed in claim 8, except for storing the long preambles in first, second, third and fourth memories in sequence as the OFDM signal is received and reading the preambles stored in the memories in response to an end point of the second long preamble being detected. Although Ryan does not disclose storing the long preambles in first, second, third and fourth memories in sequence as the OFDM signal is received, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Ryan and decompose the received signal and save it on multiple memories to reduce the size of each memory (buffer) unit. Ryan does not disclose that the FFT unit does not start the processing until the end point of the second long preamble being detected, however, in view of lack of any description by the Applicant on why the FFT processing does not occur until the end point of second long

preamble has been detected, Examiner states that it would have been obvious to one of ordinary skill in the art at the time of invention to modify Ryan and does not start the FFT processing until the end point of the second long preamble has been detected to meet the design requirements of the system. Ryan also does not disclose storing in sequence the transformed preambles in the first memory and the second memory and storing the third data in the memories in sequence, and outputting the third data stored in the memories. Makoto, discloses a fast Fourier transform device (see page, paragraph 0006, conventional example 3), comprising a 1<sup>st</sup> memory, 2<sup>nd</sup> memory, 1<sup>st</sup> input buffer, and 2<sup>nd</sup> input buffer. Makoto further discloses that the data can be divided to a first half (can be considered as preambles) and a second half (can be considered as data information), so that one data may be written in at the same time it reads one data for memories. Makoto discloses that in this example the system begins to read one data at a time from the 1<sup>st</sup> and 2<sup>nd</sup> input buffers, and it inputs into a butterfly computing unit (i.e. the FFT), and it writes at a time two data which is an operation result from this computing unit (interpreted as determining whether or not the first data and the second data are transformed), in the 1<sup>st</sup> and 2<sup>nd</sup> memories, begin to read at a time one data which performs a butterfly operation again from the 1<sup>st</sup> and 2<sup>nd</sup> memories, and operation of inputting into butterfly computing unit is repeated. Makoto discloses that as the system writes at a time one data which it outputs two pieces at a time as a result of a final butterfly operation in the 1<sup>st</sup> and 2<sup>nd</sup> output buffers, improvement in the speed is attained. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify Ryan as suggested by Makoto to increase the processing

speed of the system. Makoto does not expressly disclose activating a first and second toggle signals to control read and write operations, however, it would have been obvious to one of ordinary skill in the art at the time of invention to use different toggle signals each time (the first time is when the transformed data is saved in the 1st and 2nd memories for the first time, and the second time is when the whole process has been repeated again), to convey the control orders to the memories and synchronize the operation of the memories.

As to claim 10, Makoto does not expressly disclose storing in sequence the second data in the second memory and the forth memory when the first data is transformed by the fast Fourier transform, and outputting in sequence the third data in the first memory and the third memory. However, writing in the second and forth memory as oppose to the first and second memory (as disclosed by Makoto) is a matter of design choice and it would have been obvious to one of ordinary skill in the art at the time of invention to alternatively use the second and forth memories for storing the second data to meet the design requirements of the system.

As to claim 11, Makoto does not expressly disclose that the first toggle signal controls the read operation with respect to the first and third memories and controls the write operation with respect to the second and fourth memories, and the second toggle signal controls the write operation with respect to the first and third memories and controls the read operation with respect to the second and fourth memory. However, setting the first and second toggle signals to perform the above operations is a matter of design choice and it would have been obvious to one of ordinary skill in the art at the

time of invention to modify Makoto to read the data from the first and third memories the first time the operation has been performed and to read the data from the second and forth memory the second time the operation has been performed (i.e. during iterations) to meet the design requirements of the system.

As to claim 12, Ryan and Makoto do not disclose that the first data is delayed data by  $N/2$ , however, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Ryan and Makoto to delay the signal in order to compensate for the FFT processing time.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEILA MALEK whose telephone number is (571)272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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